

101753
12660
1898

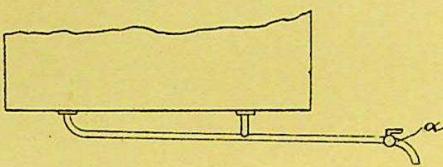


Fig. 1.

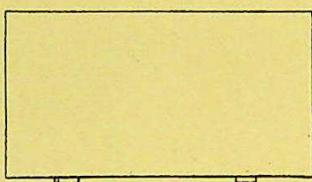


Fig. 2.

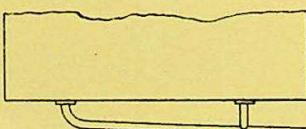
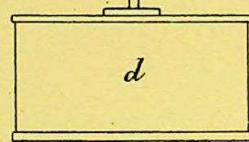
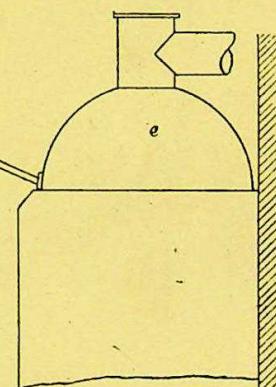
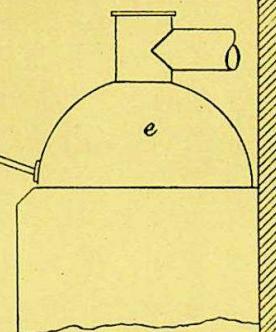
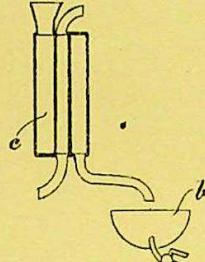


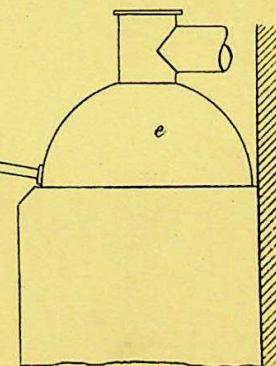
Fig. 3.



d

e

d



e

195
32

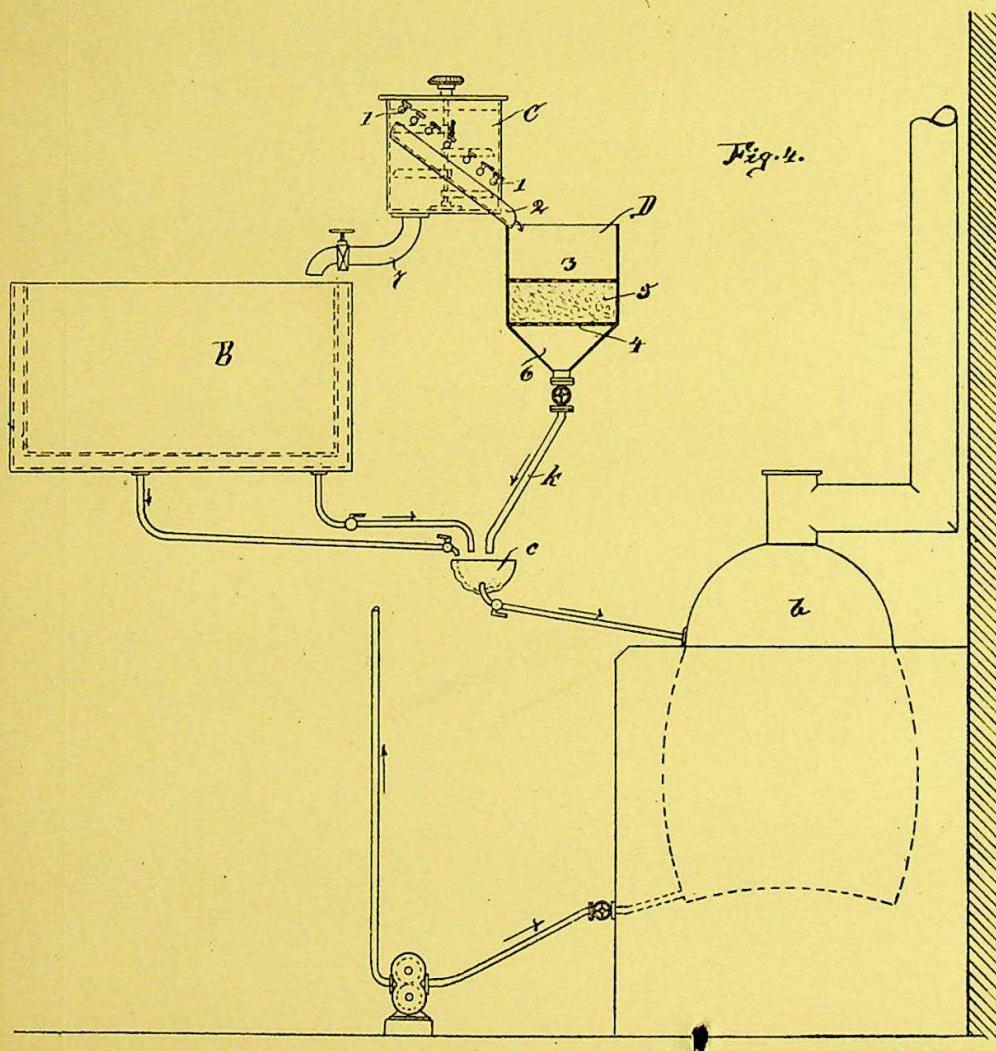
12660
(1 SHEET)

195. ALCOHOL.
Mashing-
Processes.

MASHING Processes

Div 31

[This Drawing is a reproduction of the Original on a reduced scale.]



Div. 31

1898

①

426
2999
52ASHING
ASHING Processes
36

RECORDED

N° 12,660



A.D. 1898

Date of Application, 6th June, 1898—Accepted, 13th Aug., 1898

COMPLETE SPECIFICATION.

DUPLICATE

Improvements in or relating to Brewing and Apparatus therefor.

We, GOTTFRIED KREUTZER and JEAN SCHMITZ, Directors of the Deutschen Kapital Versorgungs-Bank, Gesellschaft mit beschränkter Haftung, of Cologne, in the Empire of Germany, do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement:—

This invention relates to improvements in brewing both in the process, and also in the arrangement of the apparatus. The object of these improvements is to produce a larger quantity of wort from malt-flour than has hitherto been done.

The process consists of clarifying the beer-wort by subjecting it to a high temperature of about 80° C or more, and then of afterwards subjecting it during the course which it takes between the taps and the boiling pan to a considerable cooling, before it enters in the pan, where it is boiled with hops and saccharified completely with a diastase solution drawn off previously or prepared separately and called "cold deposit."

15. The hot wort is not brought directly into the boiling pan, but it is first cooled to about 65 to 70° C, in order to be mixed at this temperature in the pan with the before said "cold deposit," by which the particles of starch which eventually can be decomposed after the clarifying are converted completely into saccharine matter.

20. Hitherto in brewing, wort has not been clarified at so great a temperature as, at least 80° C, but at the most 65 to 70° C, but more often at a still lower temperature, nor was the so called "cold deposit" of the wort which serves for sweetening some newly decomposed starch particles added to the wort in the pan but was added only to the mash in the mash tun, neither was 25 the wort coming from the taps of the clarifying vessels subjected to a cooling before passing into the pan. The new process is therefore as follows:—

The wort made in the mash tun and also the after wort runs off from the taps at a temperature of 80° C or more, and passes then to a cooling device, which lowers its temperature to 65 or 70° C and the wort passes at this temperature into 30 the pan, where firstly the so-called "cold deposit" is added to the wort (this cold deposit may be drawn off from the wort produced in the mash tun before its temperature is increased and be put aside, or be produced in a special small mash tun in a cold manner), in order to completely sweeten all the starch particles decomposed, and the whole is then boiled with hops in the usual manner.

35. As the cooling of the wort whilst passing from the mash tun to the pan has not hitherto been done, there was of course in brewing apparatus no cooling device arranged between the taps and the pan, but the finished beer was cooled partly in the cooling vat, and partly when running from the latter into the barrels. This new arrangement differs essentially from those hitherto known by the introduction of a special cooling device between the taps and the pan through which the whole wort must pass whilst running from the taps to the pan.

The improved apparatus, may be arranged variously as, shown in the annexed

[Price 8d.]

Improvements in or relating to Brewing and Apparatus therefor.

drawing in Figs. 1—3 in different constructions, whilst Fig. 4 shows a suitable arrangement of the apparatus for the automatic production of the cold deposit in an especially small mash tun arranged next to the principal mash tun.

Either a small cooling device *c* is arranged between each single tap *a* and the collecting trough *b* usually used for catching and uniting the wort flowing out 5 from all the taps, so that each single current of wort flowing from a tap is cooled as desired, before entering the pan *e* (Fig. 1) or the trough *b* itself may be formed as a cooling device (Fig. 2); or a larger cooling device *d* may be inserted in the passage of the wort between the trough *b* and the pan *e*.

It is indifferent in either of the above cases how the cooling devices are constructed 10 provided they are formed as surface flowing or through flowing (tube) coolers.

In the annexed drawing in the arrangement shown by Fig. 1 the cooling device *c* for each single current of wort coming from a tap is formed as a through flow cooler, as the hot wort passes through the exterior annular space of 15 the cooling device, whilst the central space is formed as a tube through which cold water is passed. Of course there may be used the similar current or the counter current principle, the cooling tubes instead of being straight can also be formed in a serpentine manner or arranged in groups.

In the arrangement shown by Fig. 2 the trough *b* is formed with a double 20 wall of undulated cross section as a surface flowing cooler of great surface. Of course one can also form the trough as a simple flow cooler or by a combination of both systems, instead of a surface flowing cooler.

The arrangement in Fig. 3 shows the cooler *d* in the form of a through flow cooler, of course also here any construction of cooler especially of through flow 25 or tube cooler can be used.

Instead of drawing the "cold deposit" from the main mash tun, the same can also be made in a special smaller mash tun *C* Fig. 4, which as well as the main mash tun *B* is provided with a stirring device, but has no double walls. The cold deposit is made by mixing about 25—30 pounds of malt with a suitable quantity 30 of water of 34° C, that is to say, cold.

This mash tun *C* has arranged on its circumference in an oblique direction a number of outlets 1 provided with taps, and these taps are arranged over a channel 2 the outlet of which lies over the filtering vessel *D*.

The clear liquid is drawn off from the mash tun *C* and carried into the vessel *D* 35 by opening the single taps successively from above downwards, by this method of drawing off the clear liquid, rich in diastase, the returns deposited in the vessel are not disturbed.

The thus formed cold wort is filtered in the vessel *D*, as it passes through a filter 5 consisting of a suitable quantity of hops enclosed between the metal 40 sieves 3 and 4 and is collected beneath the filter in the funnel like bottom piece 6 of the vessel *D* and passes thence through the tube *k* to the trough *c*.

The returns and mash parts in the vessel *C* are conducted to the main mash tun through the tube 7 and worked up with the mash therein.

Having now particularly described and ascertained the nature of this 45 invention and in what manner the same is to be performed we declare that what we claim is:—

1. An improved brewing process in which the wort is purified at a temperature not less than 80° C and is then reduced before its entrance into the boiling pan to a temperature of about 65—70° C.
2. In the apparatus for the process as in Claim 1 the disposition of a cooling device in the course of the wort between the taps *a* and the pan *e*.
3. The formation of the usual collecting trough *b* provided under the taps *a* as a cooling device.
4. The apparatus serving for producing the "cold deposit" characterized by 55

Improvements in or relating to Brewing and Apparatus therefor.

the combination of the small special mash tun C having a number of outlets 1 distributed over the circumference in an oblique direction and provided with taps, with a channel 2 under the taps a filtering vessel D, provided with hops 5 lying between the metal sieves 3 and 4 and a funnel like bottom piece 6 said vessel D 5 being arranged under channel 2 and an out flow tube 7 for returning the residue to the mash tun B.

Dated this 6th day of June 1898.

HERBERT HADDAN & Co.,
Agents to Applicants, 18, Buckingham Street, Strand, W.C., London.

Redhill: Printed for Her Majesty's Stationery Office, by Malcomson & Co., Ltd.—1898